NAD SERVICE MANUAL

MONITOR SERIES

3300

INTEGRATED AMPLIFIER

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-3300-

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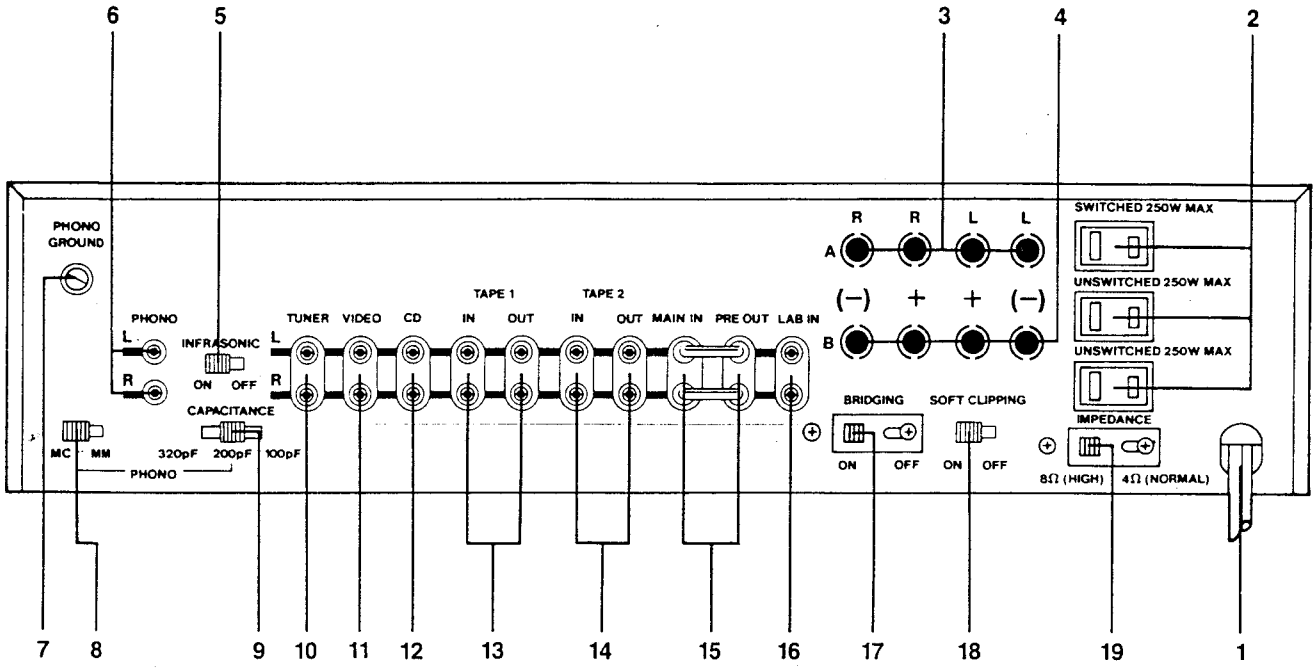
REAR PANEL

1. AC Line Cord.
2. AC Outlets (not in U.K. model)
3. Speakers A.
4. Speakers B.
5. Infrasonic Filter.
6. Phono Input.
7. Phono Ground.
8. MM/MC Selector.
9. Phono Capacitance (MM only).
10. Tuner Input.
11. Video Sound Input.
12. CD Input.
13. Tape 1 Input/Output.
14. Tape 2 Input/Output.
15. Preamp Out, Main In.
16. Lab Input.
17. Bridging.
18. Soft Clipping.
19. Speaker Impedance.

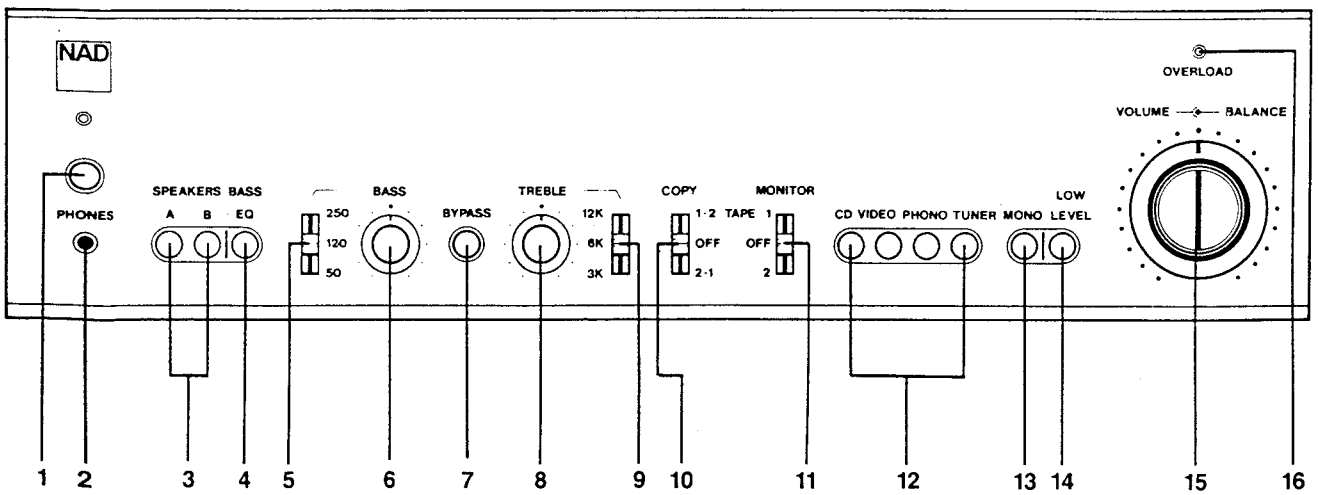
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL



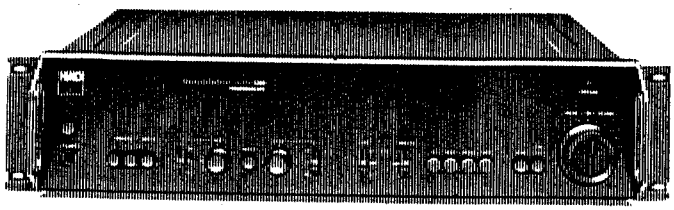
FRONT PANEL

1. Power.
2. Phones.
3. Speaker Selector.
4. Bass EQ.
5. Bass Range.
6. Bass.
7. Tone Control Bypass.
8. Treble.
9. Treble Range.
10. Tape Copy.
11. Tape Monitor.
12. Input Selector.
13. Mono.
14. Low Level.
15. Volume Balance.
16. Overload Indicator.



Specifications
The 3300 Monitor Series Amplifier

Note: Specifications are measured in accordance with EIA Standard RS-490 (IHF A-202). Measurements referenced to 8 ohms are taken with the Speaker Impedance selector set to "8Ω (High)." Measurements for 4 and 2 ohms are taken with the impedance selector at "4Ω (Normal)."



Power Amplifier Section

CONTINUOUS AVERAGE POWER OUTPUT INTO 8 OHMS (min. RMS power per channel into 8 ohms, 20Hz–20kHz, both channels driven, with no more than the rated distortion)		**60 W (17.8 dBW)**
Rated distortion (THD), **20Hz–20kHz**		0.03%
Clipping power at 8 ohms (maximum continuous power per channel)		70W
IHF dynamic headroom at 8 ohms		+6 dB
IHF dynamic power (maximum short-term power per channel)	**8 ohms:** **4 ohms:** **2 ohms:**	250W 300W 400W
Peak output current (amperes)		>30A
Reactive load rating		+1.5 dB
Transient overload recovery time		<1 µsec
Slew factor		>50
Slew rate		30V/µsec
Damping factor (ref. 8Ω , at 50 Hz)		>100
Input impedance		30 kΩ
Input sensitivity for rated power		1 V
Input sensitivity for 1 watt out		120 mV
Power amplifier gain		28dB (25×)
THD (Total Harmonic Distortion, 20Hz–20kHz, from 250mW to rated output)		<0.03%
SMPTE I.M. (Intermodulation Distortion, 60Hz + 7kHz, 4:1, from 250mW to rated output)		<0.03%
IHF I.M. (CCIF IM Distortion, 19 + 20 kHz at rated output)		<0.03%

Preamplifier Section

Phono Input

Input impedance (R and C)	**MM:** **MC:**	47kΩ + 100/200/300 pF 100Ω + 1000 pF
Input sensitivity ref. 1 watt	**MM:** **MC:**	0.4 mV 0.02 mV
Input overload	**MM:**	18mV/170mV/1.5V 0.8mV/8mV/70mV
THD (20Hz–20kHz) **and IM Dist. at +30 dB level**		<0.02%
RIAA response accuracy		± 0.3dB
S/N ratio, IHF A-weighted, with cartridge connected	**MM:** **MC:**	80 dB ref. 5 mV 80 dB ref. 0.5 mV

Line Level Inputs (CD, Video, Tape)

Input impedance	180kΩ + 100pF
Input sensitivity ref. 1 watt	25 mV
Maximum input signal	8V rms
Signal to noise ratio, A-weighted	100 dB ref. 1 W 118 dB ref. rated power
Frequency response, 20Hz–20kHz	± 0.5 dB
Crosstalk between channels	60 dB at 1 kHz 50 dB at 20 kHz
Crosstalk between inputs	70 dB at 1 kHz 60 dB at 20 kHz

Line-level outputs

Preamp output impedance	800Ω
Maximum output level	10 V
Tape output impedance	1000Ω (buffered)
Tape output infrasonic filter	−3dB at 15 Hz, 12 dB/octave

Controls

Treble	± 10 dB at 3, 6, or 12 kHz
Bass	± 10 dB at 50, 100, or 250 Hz
Bass EQ	+3 dB at 60 Hz, +6 dB at 32 Hz
Infrasonic filter (switchable)	−3 dB at 14 Hz, 18 dB/octave
Audio muting (low level)	−20 dB

Physical Specifications

Dimensions (Width × Height × Depth)	43.2 cm. ×10.5 cm. × 38.1 cm. 17 in. × 4.12 in. × 15 in.
Net Weight	10 kg/22 lb
Shipping Weight	11.3 kg/25 lb
Power Consumption	375W—110, 120, 220 or 240 VAC (50/60Hz)

NOTE: Specifications are those in effect at the time of printing. NAD reserves the right to change specifications or designs at any time without notice.

ALIGNMENT METHOD

AUDIO SECTION 3300

IMPORTANT
Speaker Impedance switch should be in 8 ohm position while adjusting center volatge and idling current.
INITIAL ADJUSTMENT (No load connected)

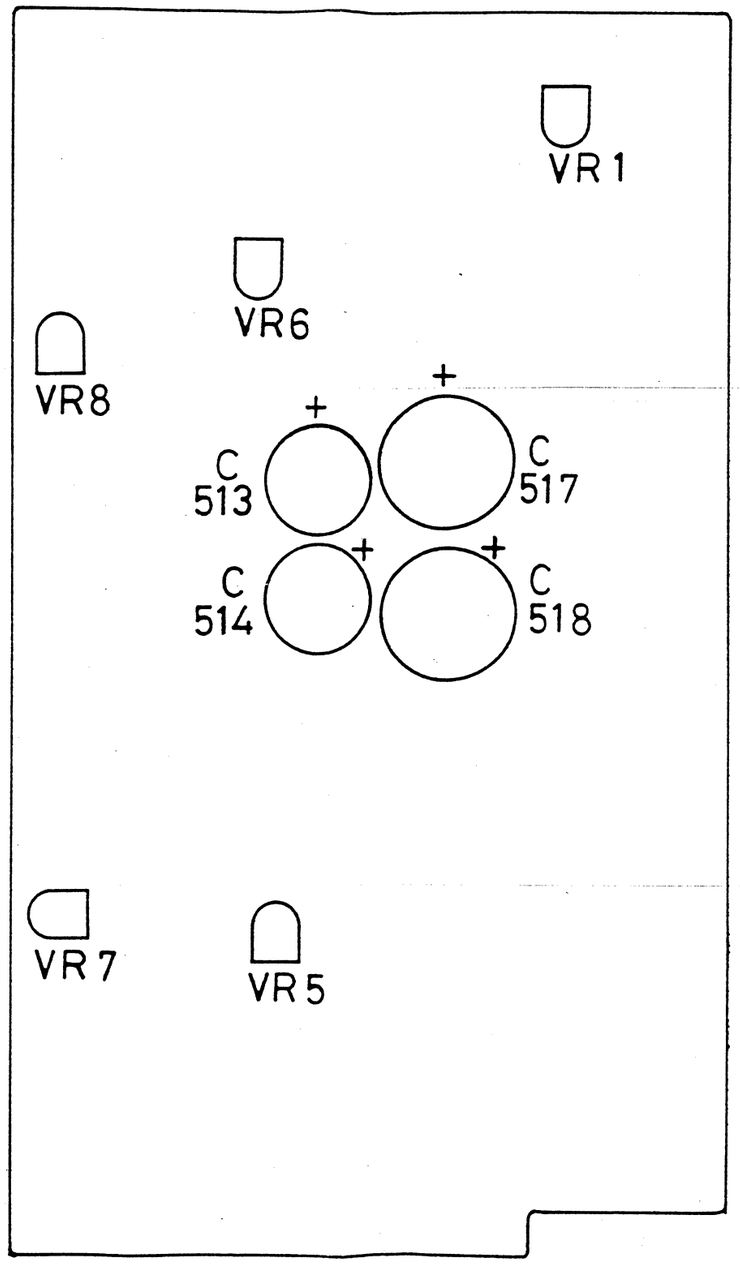
A. CENTER VOLTAGE
   1. Connect DC millivoltmeter to L channel output terminals.
   2. Turn on and adjust to 0 V ± 30mV with VR 5(10Kohm). Connect DC millivoltmeter to R channel output terminals and adjust VR 6 to 0 V ± 30mV.

B. IDLING CURRENT
   1. Connect DC millvoltmeter across R289 (0.22 ohm, TP1, TP2 output transistor s collector resistor) and adjust VR 7 for 6 - 7.2mV reading on meter. Repeat adjust with VR 8, connecting meter across R290(0.22 ohm, TP4, TP5)
   2. Leave power on for minimum 30 minutes.

FINAL ADJUSTMENT

C. CENTER VOLTAGE
   1. Repeat step A above.

D. IDLING CURRENT
   1. Repeat step B and adjust with VR 7, VR 8 for 6.6mV reading on meter.

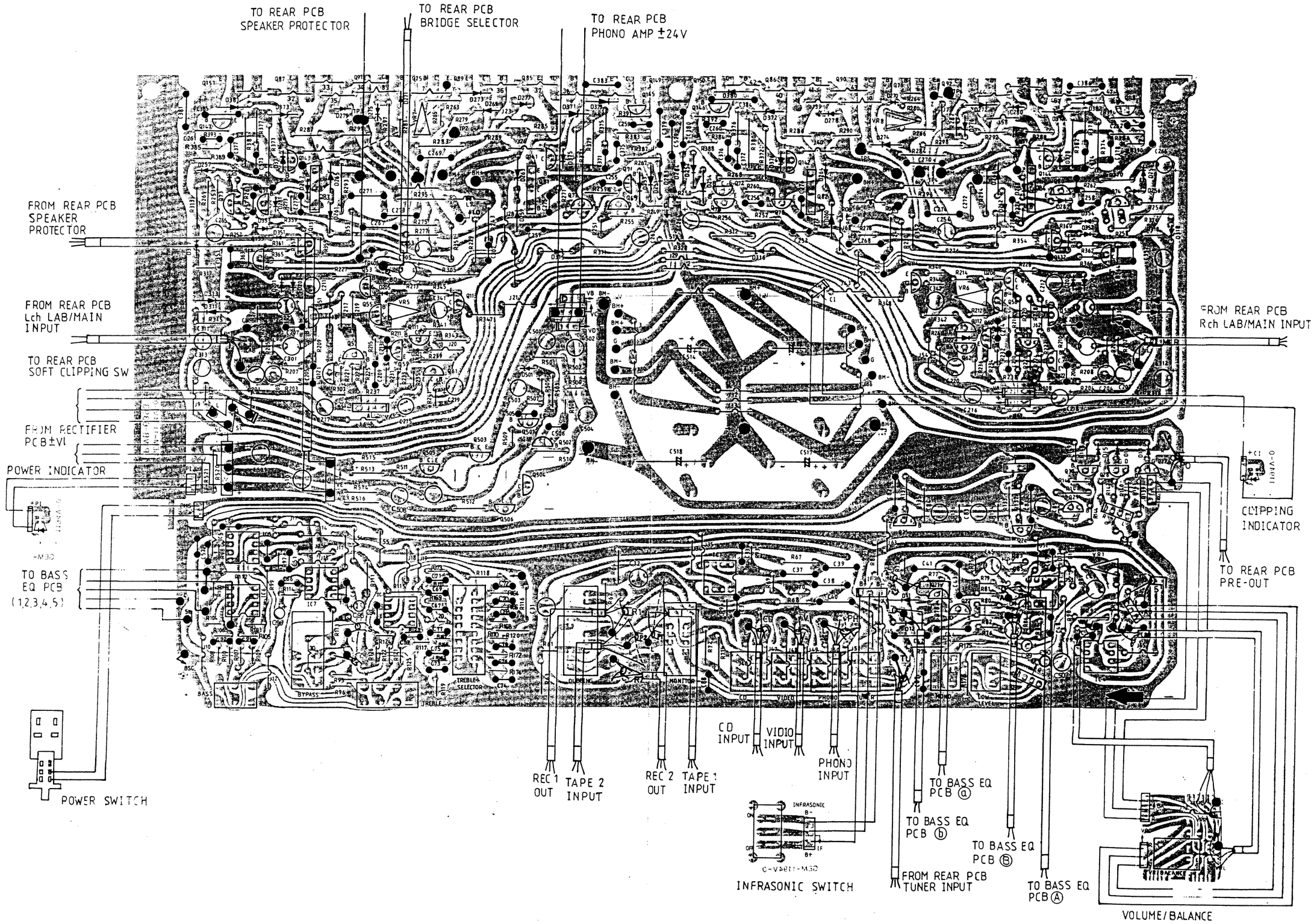


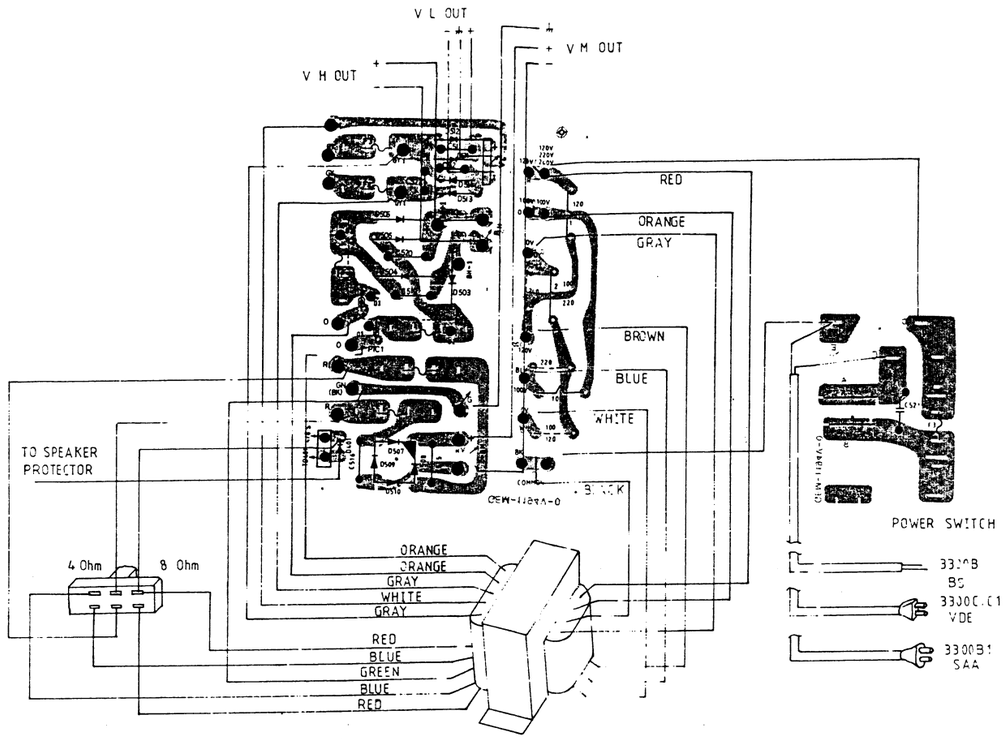
ALIGNMENT METHOD

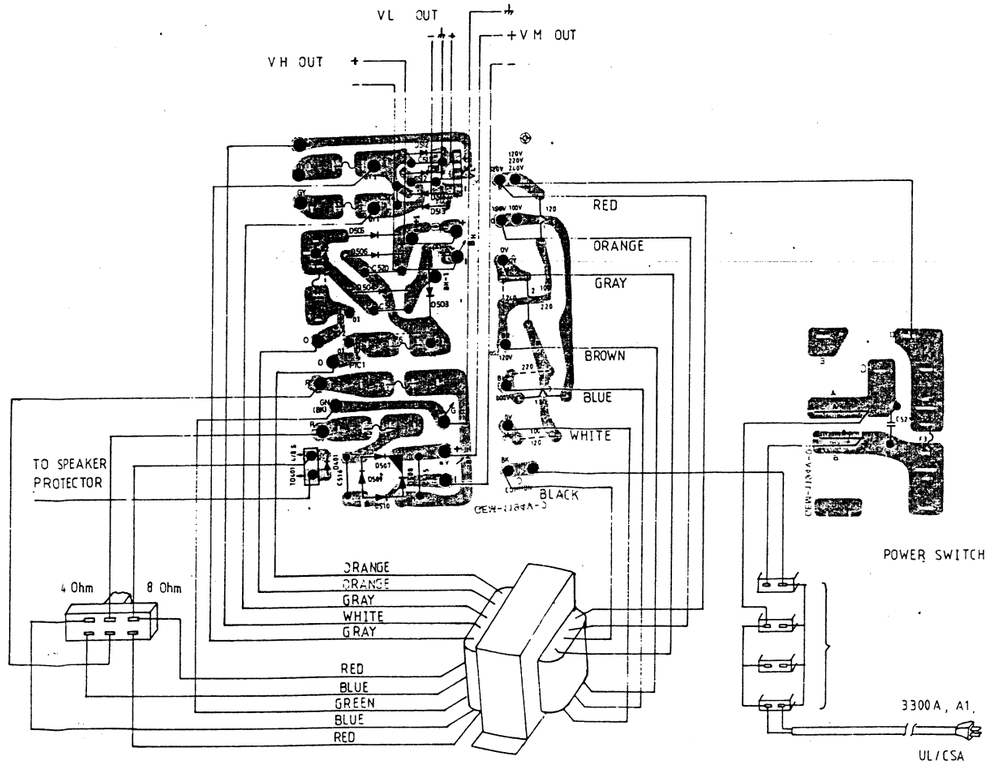
NAD 3300 SCHEMATIC DIAGRAM

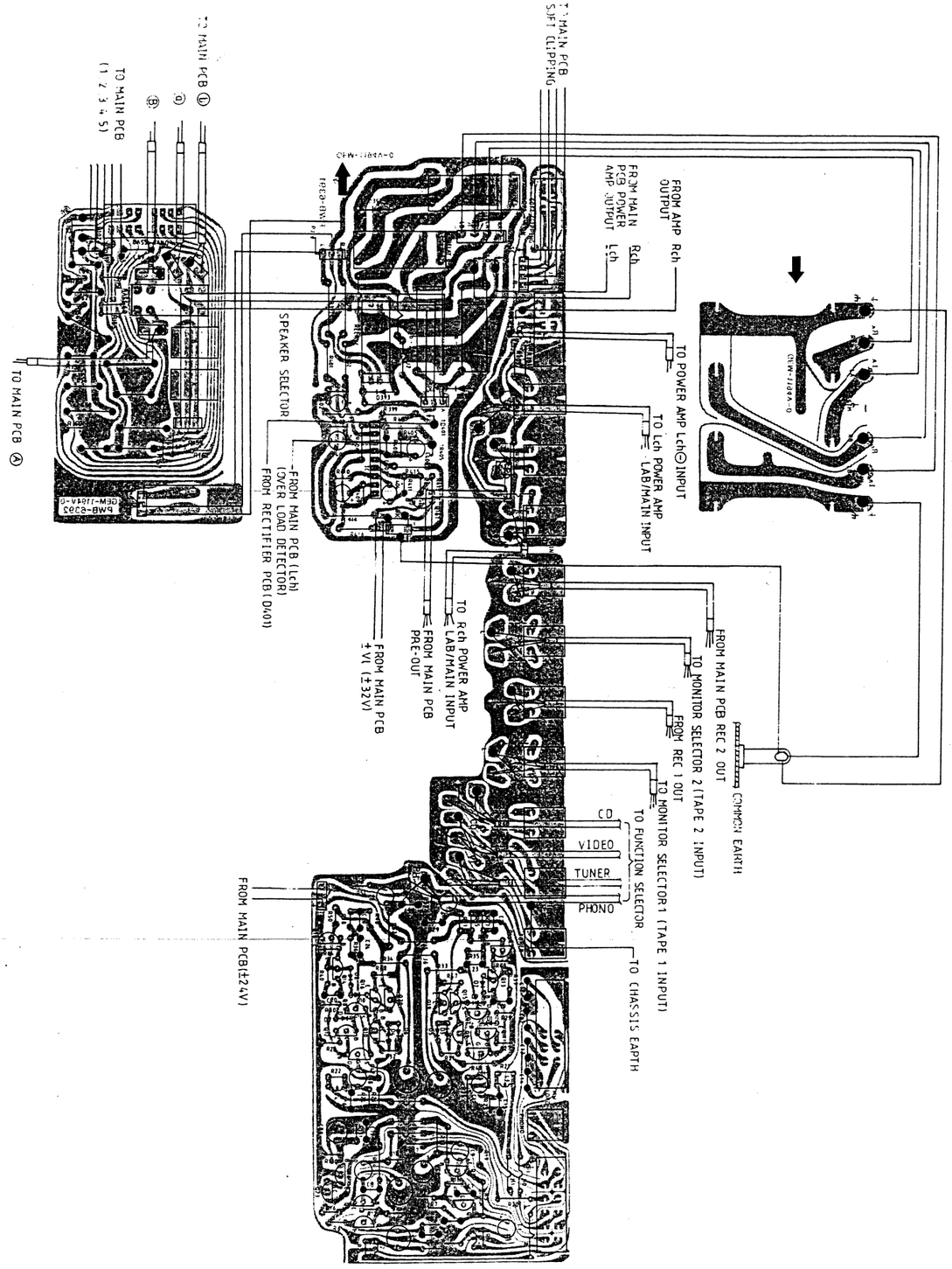
SW1a ~ 1d	MM/MC SWITCH	: MM ; MC
SW2a ~ 2b	MM LOAD SWITCH	: 100P, 200P ; 320P
SW3a ~ 3b	FUNCTION SWITCH	: PHONO ; TUNER; VIDEO , CD
SW4a ~ 4b	TAPE MONITOR SWITCH	: 1; SOURCE ; 2
SW5a ~ 5d	TAPE DUBBING SWITCH	: 1→2 OFF 2→1
SW6	INFRASONIC SWITCH	: IN ; OUT
SW7a ~ 7d	BASS EQ SWITCH	: IN ; OUT
SW8	MODE SWITCH	: MONO ; STEREO
SW9a ~ 9d	BY PASS SWITCH	: ON OFF
SW10a ~ 10d	BASS SELECTOR SWITCH	: 250Hz ;120Hz , 50Hz
SW11a ~ 11d	TREBLE SELECTOR SWITCH	: 12KHz ; 6KHz ; 3KHz
SW12a ~ 12b	LEVEL SWITCH	: 0dB ; -20dB
SW13a ~ 13b	SOFT CLIPPING SWITCH	: ON ; OFF
SW14a ~ 14b	BRIDGING SWITCH	: ON ; OFF
SW15	SPEAKER A SWITCH	: ON ; OFF
SW16	SPEAKER B SWITCH	: ON ; OFF
SW17a ~ 17b	POWER SWITCH	: ON ; OFF
SW18a ~ 16b	RELAY 1 SWITCH	: ON ; OFF
SW19a ~ 19b	RELAY 2 SWITCH	: ON ; OFF
SW20a ~ 20b	RELAY 3 SWITCH	: ON ; OFF
SW21a ~ 20b	SPEAKER SELECTOR	: 8ohm ; 4ohm
REMARK	R151 ~ R174 4.7MΩ	

NAD 3300 PCB COMPONENT LOCATION AND WIRING DIAGRAM

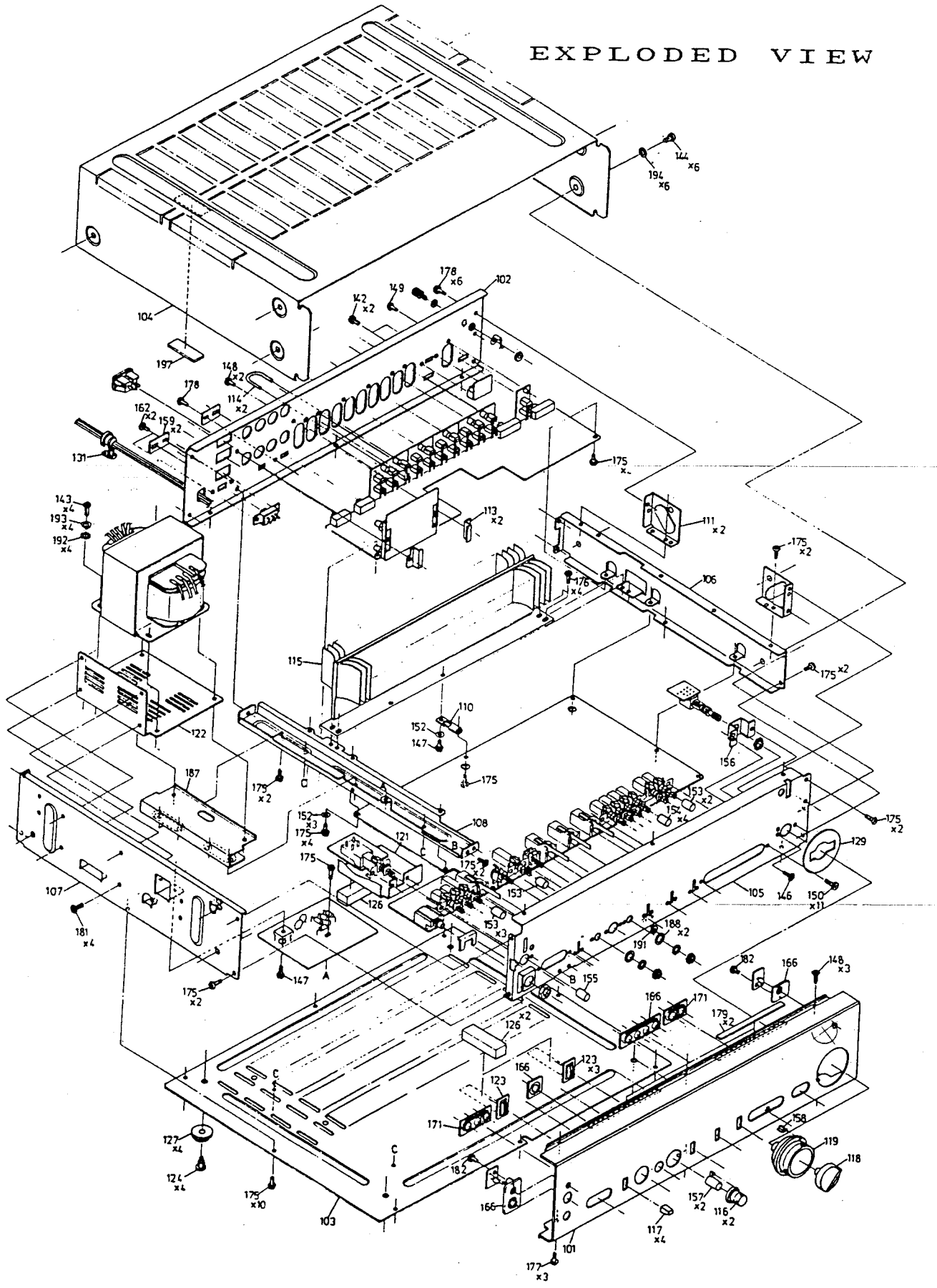



V L OUT
V M OUT
V H OUT
RED
ORANGE
GRAY
BROWN
BLUE
WHITE
BLACK
TO SPEAKER PROTECTOR
4 Ohm
8 Ohm
ORANGE
ORANGE
GRAY
WHITE
GRAY
RED
BLUE
GREEN
BLUE
RED
POWER SWITCH
3300B
BS
3300C,C1
VDE
3300B1
SAA


VL OUT
+VM OUT
VH OUT
RED
ORANGE
GRAY
BROWN
BLUE
WHITE
BLACK
TO SPEAKER PROTECTOR
4 Ohm
8 Ohm
ORANGE
ORANGE
GRAY
WHITE
GRAY
RED
BLUE
GREEN
BLUE
RED
POWER SWITCH
3300A, A1,
UL/CSA


TO MAIN PCB
SOFT CLIPPING
FROM AMP OUTPUT
FROM MAIN PCB POWER AMP OUTPUT
Rch
Lch
TO POWER AMP Lch INPUT
TO Lch POWER AMP LAB/MAIN INPUT
TO MAIN PCB (11 / 3 4 5)
TO MAIN PCB
TO MAIN PCB
SPEAKER SELECTOR
FROM MAIN PCB (Lch) (OVER LOAD DETECTOR)
FROM RECTIFIER PCB (D401)
FROM MAIN PCB ±Vt (±32V)
TO Rch POWER AMP LAB/MAIN INPUT
FROM MAIN PCB PRE-OUT
FROM MAIN PCB REC 2 OUT
TO MONITOR SELECTOR 2 (TAPE 2 INPUT)
FROM REC 1 OUT
TO MONITOR SELECTOR 1 (TAPE 1 INPUT)
COMMON EARTH
CD
VIDEO
TUNER
PHONO
TO FUNCTION SELECTOR
TO CHASSIS EARTH
FROM MAIN PCB (±24V)

EXPLODED VIEW



EXPLODED PARTS LIST

ITEM	PARTS NO.	DESCRIPTION	Q'TY
101	50 HPNLC1191-3PD	FRONT PANEL	1
102	38 GCOVR1024-3	BACK COVER	1
103	82 LCHSM1137-3P	CHASSIS	1
104	32 GCABU1050-3ZD	CABINET U	1
105	29 LANGV1041-3P	VA ANGLE	1
106	38 LANGF1200-3P	SIDE ANGLE (R)	1
107	17 LANGF1201-3P	SIDE ANGLE (L)	1
108	88 LANGF1202-3P	MIDDLE ANGLE	1
110	01 LANGK1408-3P	PCB ANGLE	1
111	72 LANGK1409-3P		2
113	20 LANGK1410-3P		2
114	40 QTIPP1001-3	JACK TIP	2
115	61 PRDAA1063-3G		1
116	53 JKNBR1624-3F	VR KNOB	2
117	66 JKNBL1625-3FD	LEVEL KNOB	4
118	77 JKNBR1626-3FD	BALANCE KNOB	1
119	88 JKNBR1627-3F	VOLUME KNOB	1
121	80 PSLD-1117-3-A		1
122	18 LANGK1509-3PL-B		1
123	47 PSPA-1143-3	LEVEL KNOB SPACER	4
124	58 LHLD-1267-3D	LEG PIN	4
126	27 PCUSS1304-3PD	PCB X 2, SHIELD-P X 1	3
127	09 PCUSS1305-3PD	LEG	4
131	56 LHLDK0066-1F	AC CORD BUSHING	1
142	54 XBBSQ26P04000	INFRASONIC SW X 2	2
143	83 XBPSD40P08000	TRANS ANG X 4	4
144	44 XDPSQ40P08000	CAB U X 6	6
146	67 XCBSD30P06000	LANGK1468 X 2	2
147	37 XCBSD30P12000	LANGK1408 X 1, TR X 1	2
148	36 XCBSQ30P06000	LANGK1210 X 2, PANEL X 3	5
149	85 XCBSQ30P08000	JACK X 7	7
150	46 XBPSD30P06000	PUSH SW X 3,LEVEL SW X 8	11
152	61 XWVSE43-05080	PCB X 3, LANGK1408 X 1	4
153	30 JKNBP1623-3FD-A	PUSH KNOB	6
154	88 JKNBP1623-3FC	PUSH KNOB	4
155	06 JKNBP1722-3F	POWER KNOB	1
156	60 LANGK1468-3P	VOLUME/BALANCE SW ANGLE	1
157	84 LHLD-1253-3	VR KNOB HOLDER	2
158	66 LHLD-1254-3	VOLUME KNOB HOLDER	1
159	13 LHLD-1252-3	SW HOLDER PLATE	2
162	40 XBBSQ30P06000	TURBO SW X 2	2
166	65 PSPA-1142-3	PUSH KNOB SPACER	1
171	83 PSPA-1141-3	PUSH KNOB SPACER	1
175	47 XHBSD30P06000	PCB X 7, VA X 6, CHASSIS X 10,LANGK1409 X 2,LANGK -1202 X 4,LANGK1408 X 1.	30
176	37 XCSSD30P08000	PRDAA1063 X 4	4
177	47 XHBSD30P06000	CHAS-R X 3	3
178	16 XHBSQ30P06000	BACK COVER X 7	7
179	56 PCUSS1062-3PD-B	PANEL SPONG	2
181	59 XBBSD40P06000	LANGF1201 X 4	4
182	33 XEBSD26P06000	LED X 2	2
187	35 LANGR1512-3PL-B	TRANS ANGLE	1
188	50 TRAP-1001-3RD		2
191	71 XWHSQ55-08120	PANEL * VA X 1	1
192	30 XWHSD42-10080	TRANS WASHER	4
193	33 XWSSD42-08100	TRANS SP WASHER	4
194	27 XWHSQ42-08100	CAB-U X 6	6
197	33 PCUSS1372-3	CAB X 1	1

3300 BILL OF MATERIALS

SYMBOL NO	PARTS NO	DESCRIPTION
BREAKER	QBRE-1001-3-V--	*UP072* THERMAL BREAKER
F-003	QFS-D402S-32K--	FUSE
F-003	QFS-D632M-31D--	FUSE
F-001,002	QFS-D632S-32K--	FUSE
HOLDER	QFSHC1002-3----	FUSE HOLD
SOCKET	QJAKP1005-3D2--	2P RCA SOCKET
SOCKET	QJAKP1014-3D4--	4P RCA SOCKET
SOCKET	QJAKP1017-3D6--	6P RCA SOCKET
JACK	QJAKS1017-3DV--	PHONES JACK
JUMPER	QJUM-0003D8125-	12.5 MM, JUMPER
LG002	QLUGS0944-1----	LUG
LUG	QPINM1001-3----	LUG
PHONO PCB	QPWB-6391-3----	PCB 330x79x1.6
EQ,RG,SP,PCB	QPWB-6392-3--1-	175.5x109.5x1.6, 94V-0
PRE/MAIN AMP PCB	QPWB-6393-3----	330x196x1.6 94V-0
SOCKET	QSOCP1014-31D--	AC OUTLET
SW005,011	QSW-B1042-34-3-	SWITCH, DUBBING-TREBLE
SW004	QSW-B1043-32-3-	SWITCH, MONITOR
SW009	QSW-P1076-32-2-	SWITCH, BYPASS
SW015,016,07	QSW-P1077-33---	SWITCH, SPK A.B, BASS,EQ
SW03,08,012	QSW-P1083-37---	(CD.VIDEO.PHONO.TUNER)SWITCH
SW017	QSW-P1084-32V2-	POWER SW
SW017	QSW-P1088-32D2-	POWER SW
SW013,014	QSW-S1033-32-2-	SOFT CLIPPING/BRIGDE SW
SW006	QSW-S1052-32-2-	INFRASONIC SW
SW001	QSW-S1064-34-2-	MM/MC SELECTOR SW
SW021 A.B.	QSW-S1066-32-2-	4OHM/8OHM SELECTOR SW
SW002	QSW-S1069-32-3-	MM LOAD SW
TIP	QTIPP1001-3----	JACK TIP
TERMINAL	QTHLB1070-3----	GROUND TERMINAL
TERMINAL	QTHLK1002-304--	BINDING POST
L-005,006	RCILS0010-3FS2-	COIL, 3UH
L-003,004	RCILT1005-3----	COIL, 3.7MH
TERMINAL	QTHLK1002-304-A	BINDING POST
D-323,502	RLEDCR101-3D1--	LIGHT EMITTING DIODE
X'FORMER	RPT-J1003-3-EX-	POWER TRNASFORMER, 220V/50Hz
X'FORMER	RPT-J1003-3-EXA	POWER TRNASFORMER, 240V/50Hz
R-035,036	RR-CZ103F-3V4-P	CARBON FILM FIXED RESISTOR
R-038	RR-CZ124F-3V4--	CARBON FILM FIXED RESISTOR
R-037	RR-CZ124F-3V4-P	CARBON FILM FIXED RESISTOR
SW020	RRLYD1014-3C-D-	RELAY
SW018,019	RRLYD1044-3EDG-	A-2, RELAY B-2
PTC01,02	RTHM-1001-3GU--	POSISTOR
VR003	RVR-RK001-3J2C-	ROTARY VARIABLE RESISTOR
VR004	RVR-RK002-3J2C-	ROTARY VARIABLE RESISTOR
VOL/BALANCE	RVR-RM003-3Z3--	ROTARY VARIABLE RESISTOR
VR007,008	RVRSH8003-8501-	SEMI-FIXED VAR. RES. 500ohm
VR001	RVRSH8101-3102-	SEMI-FIXED VAR. RES. 1Kohm
VR005,006	RVRSH8101-3103-	SEMI-FIXED VAR. RES. 10Kohm
C091,092,093,094	VCDSDU1HL101J--	CERAMIC CAPACITOR
C051,052,065,066	VCDSDU1HL101J-P	CERAMIC CAPACITOR
C-307	VCDSDU1HL151J--	CERAMIC CAPACITOR
C385,376,377, 308,371,372, 374,378,373	VCDSDU1HL151J-P	CERMAIC CAPACITOR
C505,506,079,080	VCDSDU1HL220J-P	CERAMIC CAPACITOR
C033,034,047,048	VCDSDU1HL221J-P	CERAMIC CAPACITOR
C-213,214	VCDSDU1HL391J--	CERAMIC CAPACITOR
C-086	VCDSDU1HL471J--	CERAMIC CAPACITOR
C275,276,277,278	VCDSDU1HL471J-P	CERAMIC CAPACITOR
C-020	VCDSDU1HL680J--	CERAMIC CAPACITOR

SYMBOL NO	PARTS NO.	DESCRIPTION
R-045,046	VRCPSV4--181J-P	CARBON FILM FIXED RESISTOR
R-003,004	VRCPSV4--182J-P	CARBON FILM FIXED RESISTOR
R-009,010	VRCPSV4--220J-P	CARBON FILM FIXED RESISTOR
R-265	VRCPSV4--222J-P	CARBON FILM FIXED RESISTOR
R-409	VRCPSV4--224J-P	CARBON FILM FIXED RESISTOR
R-047,048	VRCPSV4--271J-P	CARBON FILM FIXED RESISTOR
R-148,149	VRCPSV4--273J-P	CARBON FILM FIXED RESISTOR
R095,096,097, 098 ,114	VRCPSV4--332J-P	CARBON FILM FIXED RESISTOR
R-053	VRCPSVR--333J--	CARBON FILM FIXED RESISTOR
R017,018,042, 054,410	VRCPSV4--333J-P	CARBON FILM FIXED RESISTOR
R271,272,273,274	VRCPSV4--470J-P	CARBON FILM FIXED RESISTOR
R-016	VRCPSV4--471J--	CARBON FILM FIXED RESISTOR
R279,280,281,387, 388,389,390,282	VRCPSV4--471J-P	CARBON FILM FIXED RESISTOR
R-130	VRCPSV4--472J--	CARBON FILM FIXED RESISTOR
R-021,022	VRCPSV4--172J-P	CARBON FILM FIXED RESISTOR
R-249,250	VRCPSV4--473J-P	CARBON FILM FIXED RESISTOR
R-023,024	VRCPSV4--474J-P	CARBON FILM FIXED RESISTOR
R109,110,121,122	VRCPSV4--561J-P	CARBON FILM FIXED RESISTOR
R-412	VRCPSV4--562J--	CARBON FILM FIXED RESISTOR
R-404,026	VRCPSV4--563J--	CARBON FILM FIXED RESISTOR
R-403,411	VRCPSV4--563J-P	CARBON FILM FIXED RESISTOR
R-079,080	VRCPSV4--623J-P	CARBON FILM FIXED RESISTOR
R-051	VRCPSV4--681J-P	CARBON FILM FIXED RESISTOR
R-101	VRCPSV4--822J--	CARBON FILM FIXED RESISTOR
R100,103,104, 117,119	VRCPSV4--822J-P	CARBON FILM FIXED RESISTOR
R-151,152,153, 154,155,156,157, 158,159,160,161.	VRCPSV6--475J--	CARBON FILM FIXED RESISTOR
R-399	VRCPTV2--102J--	CARBON FILM FIXED RESISTOR
R311,312,313,314	VRCPTV2--103J--	CARBON FILM FIXED RESISTOR
R-297,298	VRCPTV2--183J--	CARBON FILM FIXED RESISTOR
R-283,284	VRCPTV2--331J--	CARBON FILM FIXED RESISTOR
R-520	VRCPTV2--562J--	CARBON FILM FIXED RESISTOR
R-229,230	VRCPTV2--682J--	CARBON FILM FIXED RESISTOR
R-020,049	VRCPTV4--101J-T	CARBON FILM FIXED RESISTOR
R-303,304	VRCPTV4--102J-T	CARBON FILM FIXED RESISTOR
R-415,416	VRCPTV4--103J-T	CARBON FILM FIXED RESISTOR
R-175,176	VRCPTV4--104J-T	CARBON FILM FIXED RESISTOR
R-074	VRCPTV4--105J-T	CARBON FILM FIXED RESISTOR
R-090,091	VRCPTV4--122J-T	CARBON FILM FIXED RESISTOR
R-328	VRCPTV4--132J-T	CARBON FILM FIXED RESISTOR
R-237,238	VRCPTV4--153J-T	CARBON FILM FIXED RESISTOR
R-316,315	VRCPTV4--162J-T	CARBON FILM FIXED RESISTOR
R-092,263	VRCPTV4--182J-T	CARBON FILM FIXED RESISTOR
R-033,034	VRCPTV4--201J-T	CARBON FILM FIXED RESISTOR
R-243,244,266	VRCPTV4--222J-T	CARBON FILM FIXED RESISTOR
R-147,341,342	VRCPTV4--223J-T	CARBON FILM FIXED RESISTOR
R-259	VRCPTV4--272J-T	CARBON FILM FIXED RESISTOR
R-111,112,113, 133,135	VRCPTV4--332J-T	CARBON FILM FIXED RESISTOR
R-253,254	VRCPTV4--333J-T	CARBON FILM FIXED RESISTOR
R-132,137	VRCPTV4--390J-T	CARBON FILM FIXED RESISTOR
R-252	VRCPTV4--391J-T	CARBON FILM FIXED RESISTOR
R-255,256	VRCPTV4--470J-T	CARBON FILM FIXED RESISTOR
R-510	VRCPTV4--471J-T	CARBON FILM FIXED RESISTOR
R-239,512,513,514	VRCPTV4--472J-T	CARBON FILM FIXED RESISTOR
R-406	VRCPTV4--473J-T	CARBON FILM FIXED RESISTOR

C-007,008,019	VCDSDU1HL680J-P	CERAMIC CAPACITOR
C259,260,261,262	VCDSDU2HL101J--	CERAMIC CAPACITOR
C-251,252	VCDSDU2HL220J-P	CERAMIC CAPACITOR
C-085	VCEACU1AG107M-P	ELECTROLYTIC CAPACITOR
C-001,002	VCEACU1AG108M--	ELECTROLYTIC CAPACITOR
C-211,212	VCEACU1AG227M-P	ELECTROLYTIC CAPACITOR
C-089,090,095	VCEACU1AG476M--	ELECTROLYTIC CAPACITOR
C-313,527,096, 311,312,314,528	VCEACU1AG476M-P	ELECTROLYTIC CAPACITOR
C-021,022	VCEACU1CG227M--	ELECTROLYTIC CAPACITOR
C-401,402	VCEACU1CG476M-P	ELECTROLYTIC CAPACITOR
C-405	VCEACU1EG226M-P	ELECTROLYTIC CAPACITOR
C-003,004	VCEACU1EG227M--	ELECTROLYTIC CAPACITOR
C-080	VCEACU1EG476M--	ELECTROLYTIC CAPACITOR
C-083,084	VCEACU1EG476M-P	ELECTROLYTIC CAPACITOR
C-046,341	VCEACU1HG105M--	ELECTROLYTIC CAPACITOR
C-406	VCEACU1HG105M-P	ELECTROLYTIC CAPACITOR
C219,253,301,503 504,220,254,302	VCEACU1HG106M-P	ELECTROLYTIC CAPACITOR
C-018	VCEACU1HG225M--	ELECTROLYTIC CAPACITOR
C-017	VCEACU1HG225M-P	ELECTROLYTIC CAPACITOR
C-404	VCEACU1HG474M-P	ELECTROLYTIC CAPACITOR
C-203,204	VCEACU1HG684M--	ELECTROLYTIC CAPACITOR
C-201,202	VCECU1HG684M-P	ELECTROLYTIC CAPACITOR
C-305	VCEACU1JG476M--	ELECTROLYTIC CAPACITOR
C-509	VCEACU1VG108Y--	ELECTROLYTIC CAPACITOR
C-507,508	VCEACU1VG227M--	ELECTROLYTIC CAPACITOR
C-510	VCEACU1VG477M--	ELECTROLYTIC CAPACITOR
C-517,518	VCEACU2AG109Y--	ELECTROLYTIC CAPACITOR
C263,264,265,266	VCEACU2AG475M-P	ELECTROLYTIC CAPACITOR
C-513,514	VCEALS1HG109Y--	ELECTROLYTIC CAPACITOR
C255,256,257,258	VCKBDU1HY102K-P	CERAMIC CAPACITOR
C-207,208	VCKBDU1HY821K-P	CERAMIC CAPACITOR
C-005,006	VCKDDU1HY102M-P	CERAMIC CAPACITOR
C-521	VCKEDU7EY472MV3	CERAMIC CAPACITOR
C267,268,269,270	VCKFDU1HY104Z--	CERAMIC CAPACITOR
C383,384,385,386	VCKFDU2AY104Z--	CERAMIC CAPACITOR
C-521	VCKFDU7BY472PD3	CERAMIC CAPACITOR
C-522	VCMEHU2AG473K--	POLYPROFILM CAPACITOR
C057,058,063,064	VCMEHY2AG564J--	POLYPROFILM CAPACITOR
C071,072,077,078	VCPELU1HG103J-P	POLYPROFILM CAPACITOR
C037,308,309,040	VCPELU1HG104J--	POLYPORFILM CAPACITOR
C-205,206	VCPELU1HG122J-P	POLYPROFILM CAPACITOR
C-029,030	VCPELU1HG222J-P	POLYPROFILM CAPACITOR
C041,042,043,044	VCPELU1HG224J--	POLYPROFILM CAPACITOR
C-025,026	VCPELU1HG273J-P	POLYPROFILM CAPACITOR
C05,056,061,062	VCPELU1HG274J--	POLYPROFILM CAPACITOR
C069,070,075,076	VCPELU1HG472J-P	POLYPROFILM CAPACITOR
C271,272,273,274	VCPELU2AG104K--	POLYPROFILM CAPACITOR
C-023,024	VCPSQU1HG752J--	POLYPROFILM CAPACITOR
C209,210,081,082 351,352,529.	VCSRDU1EY104M--	POLYPROFILM CAPACITOR
R-028,030	VRCPSV4--101J--	CARBON FILM FIXED RESISTOR
R027,029,031,032 019,050	VRCPSV4--101J-P	CARBON FILM FIXED RESISTOR
R-413	VRCPSV4--102J-P	CARBON FILM FIXED RESISTOR
R-044	VRCPSV4--103J--	CARBON FILM FIXED RESISTOR
R-043	VRCPSV4--103J-P	CARBON FILM FIXED RESISTOR
R-008	VRCPSV4--121J--	CARBON FILM FIXED RESISTOR
R-007	VRCPSVR--121J-P	CARBON FILM FIXED RESISTOR
R-131	VRCPSV4--124J-P	CARBON FILM FIXED RESISTOR
R-039,040	VRCPSV4--151J-P	CARBON FILM FIXED RESISTOR
R-408	VRCPSV4--153J--	CARBON FILM FIXED RESISTOR
R-087	VRCPTV4--475J-T	CARBON FILM FIXED RESISTOR
R-217,218,219,220	VRCPTV4--561J-T	CARBON FILM FIXED RESISTOR
R-401,402,025	VRCPTV4--563J-T	CARBON FILM FIXED RESISTOR
R-267,268,269,270	VRCPTV4--680J-T	CARBON FILM FIXED RESISTOR
R-503	VRCPTV4--681J-T	CARBON FILM FIXED RESISTOR
R-521,139	VRCPTV4--682J-T	CARBON FILM FIXED RESISTOR
R-067,068	VRCPTV4--683J-T	CARBON FILM FIXED RESISTOR
R-102	VRCPTV4--822J--	CARBON FILM FIXED RESISTOR
R-099,115,116 118,120	VRCPTV4--822J-T	CARBON FILM FIXED RESISTOR
R-061	VRCPTV6--101J-T	CARBON FILM FIXED RESISTOR
R-307	VRCPTV6--103J-T	CARBON FILM FIXED RESISTOR
R-344	VRCPTV6--104J-T	CARBON FILM FIXED RESISTOR
R-073,144	VRCPTV6--105J-T	CARBON FILM FIXED RESISTOR
R-089	VRCPTV6--122J-T	CARBON FILM FIXED RESISTOR
R-327	VRCPTV6--132J-T	CARBON FILM FIXED RESISTOR
R-257,258	VRCPTV6--151J-T	CARBON FILM FIXED RESISTOR
R-317,318	VRCPTV6--162J-T	CARBON FILM FIXED RESISTOR
R-075,076	VRCPTV6--164J-T	CARBON FILM FIXED RESISTOR
R-221,222	VRCPTV6--182J-T	CARBON FILM FIXED RESISTOR
R-093,094	VRCPTV6--184J-T	CARBON FILM FIXED RESISTOR
R-233,234,235,236	VRCPTV6--221J-T	CARBON FILM FIXED RESISTOR
R-207,208,209,210	VRCPTV6--222J-T	CARBON FILM FIXED RESISTOR
R-134,136,357, 358,359,360	VRCPTV6--223J-T	CARBON FILM FIXED RESISTOR
R-202	VRCPTV6--224J-T	CARBON FILM FIXED RESISTOR
R-260,262	VRCPTV6--272J-T	CARBON FILM FIXED RESISTOR
R-329,330	VRCPTV6--274J-T	CARBON FILM FIXED RESISTOR
R-346	VRCPTV6--330J-T	CARBON FILM FIXED RESISTOR
R-227,228	VRCPTV6--331J-T	CARBON FILM FIXED RESISTOR
R-225,226,361, 362,365,366	VRCPTV6--333J-T	CARBON FILM FIXED RESISTOR
R-083,084	VRCPTV6--334J-T	CARBON FILM FIXED RESISTOR
R-509,251	VRCPTV6--391J-T	CARBON FILM FIXED RESISTOR
R-105,106,124	VRCPTV6--392J-T	CARBON FILM FIXED RESISTOR
R-205,206	VRCPTV6--393J-T	CARBON FILM FIXED RESISTOR
R-082	VRCPTV6--472J-T	CARBON FILM FIXED RESISTOR
R-141,142	VRCPTV6--681J-T	CARBON FILM FIXED RESISTOR
R-140	VRCPTV6--682J-T	CARBON FILM FIXED RESISTOR
R-214,213	VRCPTV6--911J-T	CARBON FILM FIXED RESISTOR
R-516	VRFPTV2--100J--	FUSE RESISTOR
R-515	VRFPTV2--6R8J--	FUSE RESISTOR
R-285,286,287,288 288,289,290,291,	VRLCT03--R22K--	WIRE WOUND RESISTOR
R-006	VRMPSV4--152F--	METAL FILM RESISTOR
R-011,012	VRMPSV4--471F-P	METAL OXIDE FILM RESISTOR
R-005	VRMPTV4--152F-T	METAL OXIDE FILM RESISTOR
R-013,014	VRMPTV4--392F-T	METAL OXIDE IFLM RESISTOR
R-414	VRNMT02--101J--	CARBON (SOLID) RESISTOR
R-371,372,373,374	VRNMT02--123J--	METAL OXIDE FILM RESISTOR
R-295,296	VRBNT02--3R3J--	METAL OXIDE FILM RESISTOR
R-397,398	VRNMT02--471J--	METAL OXIDE FILM RESISTOR
R-293,294	VRNMT02--6R8J--	METAL OXIDE FILM RESISTOR
R-395,379,380, 381,382	VRNMT02--682J--	METAL OXIDE IFLM RESISTOR
D-507,508,509,510	VSDPBPC604-----	DIODE
D-277,278,279,280	VSDPR6004------	DIODE
D-401	VSD1N4001------	DIODE
D-379,380,381,382	VSD1N4004------	DIODE
F-393	VSD1N4148------	DIODE
D-314,322,283,261 284,011,012,262,	VSD1N4148-----T	DIODE
D-503,504,505,506	VSD1N5404------	DIODE